

Appl. No. 10/619,934
Amdt. Dated June 14, 2004
Reply to Office Action of March 22, 2004

Attorney Docket No. 81788.0253
Customer No.: 26021

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A manufacturing method of a semiconductor device, comprising:

forming a buried insulating film in a semiconductor substrate;

forming semiconductor elements isolated by the buried insulating film;

cleaning a surface side of the semiconductor substrate with a cleaning solution; and

covering a surface side of the buried insulating film with a protective film before the step of cleaning the surface side of the semiconductor substrate, wherein a the protective film is resistant to the cleaning solution, and the top of the protective film is lower than the top of the semiconductor elements.

2. (Original) The manufacturing method of the semiconductor device according to claim 1, wherein the cleaning solution is a hydrofluoric acid based solution.

3. (Original) The manufacturing method of the semiconductor device according to claim 2, wherein the hydrofluoric acid based solution is a hydrogen fluoride (HF) solution or an ammonium fluoride (NH₄F) solution.

4. (Original) The manufacturing method of the semiconductor device according to claim 2, wherein the protective film is a material which is resistant to the hydrofluoric acid based solution.

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5. (Original) The manufacturing method of the semiconductor device according to claim 4, wherein the protective film is a silicon nitride film.

6. (Original) The manufacturing method of the semiconductor device according to claim 5, wherein the semiconductor element is a MISFET, and the manufacturing method further comprising forming a sidewall on a side portion of a gate electrode of the MISFET, and wherein the sidewall and the protective film are the same material.

7. (Original) The manufacturing method of the semiconductor device according to claim 6, further comprising forming a salicide metal layer on the gate electrode, a source diffusion region, and a drain diffusion region of the MISFET after the step of cleaning the surface side of the semiconductor substrate.

8. (Currently Amended) A semiconductor device, comprising:
a buried insulating film which is formed in a semiconductor substrate;
semiconductor elements which are formed on the semiconductor substrate and which are isolated by the buried insulating insulating film; and
a protective film which covers all of a surface side of the buried insulating film but which does not cover at least a region in which a salicide metal layer of the semiconductor element is formed, wherein the protective film is resistant to a hydrofluoric acid based solution and the top of the protective film is lower than the top of the semiconductor elements.

9. (Original) The semiconductor device according to claim 8, wherein the protective film is a silicon nitride film.

10. (Original) The semiconductor device according to claim 8, wherein the semiconductor element is a MISFET, and

the semiconductor device further comprises a sidewall which is formed on a side portion of a gate electrode of the MISFET, wherein the sidewall is made of the same material as the protective film.

11. (Currently Amended) A semiconductor device, comprising:
a buried insulating film which is formed in a semiconductor substrate;
MISFETs which are formed on the semiconductor substrate and which are isolated by the buried insulating film;

a protective film which covers all of a surface side of the buried insulating film and which is resistant to a hydrofluoric acid based solution, the top of the protective film being lower than the top of gate electrodes of the MISFETs; and

a salicide metal layer which is formed on source/drain diffusion regions of the MISFET and which is formed in a self-alignment manner relative to the protective film.

12. (Original) The semiconductor device according to claim 11, wherein the protective film is a silicon nitride film.

13. (Original) The semiconductor device according to claim 11, further comprising a sidewall which is formed on a side portion of a gate electrode of the MISFET, wherein the sidewall is made of the same material as the protective film.

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14. (New) The manufacturing method of the semiconductor device according to claim 1, wherein the semiconductor element is a MISFET, and the top of the semiconductor element is the top of a gate electrode of the MISFET.

15. (New) The manufacturing method of the semiconductor device according to claim 14, wherein the buried insulating film is formed by an STI manufacturing process.

16. (New) The semiconductor device according to claim 8, wherein each of the semiconductor elements is a MISFET, and the top of the semiconductor element is the top of a gate electrode of the MISFET.

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Amendments to the Drawings:

The attached sheet of drawings includes changes to Figs. 1-3. The sheets, which include Fig. 1-3, replace the original sheets including Fig. 1-3.

Attachment: Replacement Sheet
Annotated Sheet Showing Changes